What is claimed is:

1. A method of establishing communications between a plurality of wireless devices including at least a first wireless device and a second wireless device, the method comprising the steps of:

(a) scanning, by the first wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(a1) measuring noise at a plurality of frequencies within the given frequency band;

(a2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(a3) determining available frequency channels within the given frequency band based upon the steps of measuring the noise and measuring the signals;

(b) computing a spectral signature for the available frequency channels within the given frequency band;

(c) establishing far-end communication parameters for the second wireless device; and

(d) transmitting the far-end communication parameters to the second wireless device.

2. The method of claim 1, further comprising the step of setting a plurality of frequency bands for scanning by the first wireless device.

3. The method of claim 1, further comprising the step of initializing scan receiver parameters by the first wireless device prior to the step of scanning the given frequency band.

4. The method of claim 3, wherein the step of initializing scan receiver parameters comprises the step of receiving at least one user configuration input.

5. The method of claim 4, wherein said at least one user configuration input includes data speed and type of service.

6. The method of claim 4, wherein the step of establishing far-end communication parameters comprises the step of comparing the spectral signature for the available frequency channels with said at least one user configuration input.

7. The method of claim 1, wherein the step of measuring the noise comprises the steps of measuring a noise floor and measuring an average noise level over the given frequency band.

8. The method of claim 1, wherein the communication parameters include a map of the available frequency channels within the given frequency band.

9. The method of claim 8, wherein the communication parameters further include quality parameters.

10. The method of claim 9, wherein the quality parameters include a bit error rate (BER).

11. The method of claim 9, wherein the quality parameters include a correlation time.

12. The method of claim 9, wherein the quality parameters include block errors.

13. The method of claim 1, wherein the step of transmitting the communication parameters to the second wireless device comprises the step of transmitting a calling signal carrying the communication parameters over a given calling frequency.

14. The method of claim 13, wherein the step of transmitting the calling signal over the given calling frequency comprises the step of transmitting the calling signal with a high processing gain, the calling signal receivable by the second wireless device in a noisy environment.

15. The method of claim 1 for continually maintaining communications between the first wireless device and the second wireless device, comprising the steps of repeating steps (a)-(d) to transmit time-varying communication parameters from the first wireless device to the second wireless device.

16. The method of claim 1, further comprising the steps of:

(e) receiving, by the second wireless device, the communication parameters from the first wireless device;

(f) scanning, by the second wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(f1) measuring noise at a plurality of frequencies within the given frequency band;

(f2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(f3) determining a second plurality of available frequency channels within the given frequency band based upon the steps of measuring the noise and measuring the signals;

(g) computing, by the second wireless device, a second spectral signature for the second plurality of available frequency channels within the given frequency band;

(h) establishing, by the second wireless device, a second plurality of far-end communication parameters for the first wireless device; and

(i) transmitting, by the second wireless device, the second plurality of far-end communication parameters to the first wireless device.

17. The method of claim 16 for continually maintaining communications between the first wireless device and the second wireless device, comprising the steps of repeating steps (e)-(i) to exchange time-varying communication parameters between the first wireless device and the second wireless device.

18. The method of claim 17, wherein the communication parameters are exchanged between the first wireless device and the second wireless device as link level data.

19. The method of claim 1 for establishing communications between the first wireless device and a third wireless device, further comprising the steps of:

(e) scanning, by the first wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(e1) measuring noise at a plurality of frequencies within the given frequency band;

(e2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(e3) determining available frequency channels for the third wireless device within the given frequency band based upon the steps of measuring the noise and measuring the signals;

(f) computing a spectral signature for the available frequency channels for the third wireless device within the given frequency band;

(g) establishing far-end communication parameters for the third wireless device; and

(h) transmitting the far-end communication parameters to the third wireless device.

20. A method of establishing communications between a plurality of wireless devices including at least a first wireless device and a second wireless device, the method comprising the steps of:

(a) scanning, by the first wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(a1) measuring noise at a plurality of frequencies within the given frequency band;

(a2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(a3) determining a first plurality of available frequency channels within the given frequency band based upon the steps of measuring the noise and measuring the signals;

(b) computing, by the first wireless device, a first spectral signature for the first plurality of available frequency channels within the given frequency band;

(c) establishing, by the first wireless device, a first plurality of far-end communication parameters for the second wireless device;

(d) transmitting, by the first wireless device, the first plurality of far-end communication parameters to the second wireless device;

(e) receiving, by the second wireless device, the first plurality of far-end communication parameters from the first wireless device;

(f) scanning, by the second wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(f1) measuring noise at a plurality of frequencies within the given frequency band;

(f2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(f3) determining a second plurality of available frequency channels within the given frequency band based upon the steps of measuring the noise and measuring the signals;

(g) computing, by the second wireless device, a second spectral signature for the second plurality of available frequency channels within the given frequency band;

(h) establishing, by the second wireless device, a second plurality of far-end communication parameters for the first wireless device; and

(i) transmitting, by the second wireless device, the second plurality of far-end communication parameters to the first wireless device.

21. The method of claim 20, further comprising the step of setting a plurality of frequency bands for scanning by the first wireless device.

22. The method of claim 20, further comprising the step of initializing scan receiver parameters by the first wireless device prior to the step of scanning the given frequency band by the first wireless device.

23. The method of claim 22, wherein the step of initializing scan receiver parameters by the first wireless device comprises the step of receiving at least one user configuration input by the first wireless device.

24. The method of claim 23, wherein said at least one user configuration input includes data speed and type of service.

25. The method of claim 23, wherein the step of establishing the first plurality of far-end communication parameters by the first wireless device comprises the step of comparing the first spectral signature for the first plurality of available frequency channels with said at least one user configuration input.

26. The method of claim 20, wherein the step of measuring the noise by the first wireless device comprises the steps of measuring a noise floor and measuring an average noise level over the given frequency band by the first wireless device, and wherein the step of measuring the noise by the second wireless device comprises the steps of measuring a noise floor and measuring an average noise level over the given frequency band by the second wireless device.

27. The method of claim 20, wherein the communication parameters for the first and second wireless devices include

first and second maps of the available frequency channels within the given frequency band, respectively.

28. The method of claim 27, wherein the communication parameters further include quality parameters.

29. The method of claim 28, wherein the quality parameters include a bit error rate (BER).

30. The method of claim 28, wherein the quality parameters include a correlation time.

31. The method of claim 28, wherein the quality parameters include block errors.

32. The method of claim 20, wherein the step of transmitting the first plurality of communication parameters by the first wireless device to the second wireless device comprises the step of transmitting a first calling signal carrying the first plurality of communication parameters over a first calling frequency, and wherein the step of transmitting the second plurality of communication parameters by the second wireless device to the first wireless device comprises the step of transmitting a second calling signal carrying the second plurality of communication parameters over a second calling frequency.

33. The method of claim 20 for continually maintaining communications between the first wireless device and the

second wireless device, comprising the steps of repeating steps (a)-(i) to exchange time-varying communication parameters between the first wireless device and the second wireless device.

34. The method of claim 20, wherein the communication parameters are exchanged between the first wireless device and the second wireless device as link level data.

35. The method of claim 20 for establishing communications between the first wireless device and a third wireless device, further comprising the steps of:

(j) scanning, by the first wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(j1) measuring noise at a plurality of frequencies within the given frequency band;

(j2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(j3) determining available frequency channels for the third wireless device within the given frequency band based upon the steps of measuring the noise and measuring the signals;

(k) computing, by the first wireless device, a spectral signature for the available frequency channels for the third wireless device within the given frequency band;

(l) establishing, by the first wireless device, far-end communication parameters for the third wireless device; and

(m) transmitting, by the first wireless device, the far-end communication parameters to the third wireless device.

36. A method of establishing communications between a plurality of wireless devices including at least a first wireless device and a second wireless device, the method comprising the steps of:

(a) setting a plurality of frequency bands for scanning by the first wireless device;

(b) initializing scan receiver parameters by the first wireless device;

(c) scanning, by the first wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(c1) measuring noise at a plurality of frequencies within the given frequency band;

(c2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(c3) determining a first plurality of available frequency channels within the given frequency band based upon the steps of measuring the noise and measuring the signals;

(d) computing, by the first wireless device, a first spectral signature for the first plurality of available frequency channels within the given frequency band;

(e) establishing, by the first wireless device, a first plurality of far-end communication parameters for the second wireless device;

(f) transmitting, by the first wireless device, the first plurality of far-end communication parameters to the second wireless device;

(g) receiving, by the second wireless device, the first plurality of far-end communication parameters from the first wireless device;

(h) scanning, by the second wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(h1) measuring noise at a plurality of frequencies within the given frequency band;

(h2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(h3) determining a second plurality of available frequency channels within the given frequency band

based upon the steps of measuring the noise and measuring the signals;

(i) computing, by the second wireless device, a second spectral signature for the second plurality of available frequency channels within the given frequency band;

(j) establishing, by the second wireless device, a second plurality of far-end communication parameters for the first wireless device;

(k) transmitting, by the second wireless device, the second plurality of far-end communication parameters to the first wireless device; and

(l) continually maintaining communications between the first wireless device and the second wireless device, comprising the steps of:

repeating steps (c)-(f) to transmit time-varying communication parameters from the first wireless device to the second wireless device; and

repeating steps (h)-(k) to transmit time-varying communication parameters from the second wireless device to the first wireless device.

37. The method of claim 36, wherein the step of initializing scan receiver parameters by the first wireless device comprises the step of receiving at least one user configuration input by the first wireless device.

38. The method of claim 37, wherein said at least one user configuration input includes data speed and type of service.

39. The method of claim 37, wherein the step of establishing the first plurality of far-end communication parameters by the first wireless device comprises the step of comparing the first spectral signature for the first plurality of available frequency channels with said at least one user configuration input.

40. The method of claim 36, wherein the step of measuring the noise by the first wireless device comprises the steps of measuring a noise floor and measuring an average noise level over the given frequency band by the first wireless device, and wherein the step of measuring the noise by the second wireless device comprises the steps of measuring a noise floor and measuring an average noise level over the given frequency band by the second wireless device.

41. The method of claim 36, wherein the communication parameters for the first and second wireless devices include first and second maps of the available frequency channels within the given frequency band, respectively.

42. The method of claim 41, wherein the communication parameters further include quality parameters.

43. The method of claim 42, wherein the quality parameters include a bit error rate (BER).

44. The method of claim 42, wherein the quality parameters include a correlation time.

45. The method of claim 42, wherein the quality parameters include block errors.

46. The method of claim 36, wherein the step of transmitting the first plurality of communication parameters by the first wireless device to the second wireless device comprises the step of transmitting a first calling signal carrying the first plurality of communication parameters over a first calling frequency, and wherein the step of transmitting the second plurality of communication parameters by the second wireless device to the first wireless device comprises the step of transmitting a second calling signal carrying the second plurality of communication parameters over a second calling frequency.

47. The method of claim 36, wherein the communication parameters are exchanged between the first wireless device and the second wireless device as link level data.

48. The method of claim 36 for establishing communications between the first wireless device and a third wireless device, further comprising the steps of:

(m) scanning, by the first wireless device, a given frequency band for receiving a radio signal, comprising the steps of:

(m1) measuring noise at a plurality of frequencies within the given frequency band;

(m2) measuring signals at a plurality of frequencies within the given frequency band to determine whether any of the frequencies within the given frequency band is used by an existing communication link;

(m3) determining available frequency channels for the third wireless device within the given frequency band based upon the steps of measuring the noise and measuring the signals;

(n) computing, by the first wireless device, a spectral signature for the available frequency channels for the third wireless device within the given frequency band;

(o) establishing, by the first wireless device, far-end communication parameters for the third wireless device; and

(p) transmitting, by the first wireless device, the far-end communication parameters to the third wireless device.